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An overview containing introduction, definition of terms, developmental activity spaces, environment for independent study, and unanswered questions, is provided. A selected bibliography of recent citations, 1957-1967, including references useful to the planning and designing of space for independent study is grouped under the following subject areas--(1) philosophy and background, (2) facilities, (3) equipment, (4) material, (5) pupil and staff, (6) design, and (7) general. Other environmental influences for the designer include thermal, visual, and sonic considerations. (JS)

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CONSIDERATIONS IN THE DEVELOPMENT AND USE OF

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CONSIDERATIONS IN THE DEVELOPMENT AND USE OF FACILITIES FOR INDEPENDENT STUDY

A State-of-the Art Paper

Prepared for the

ERIC Clearinghouse on Educational Facilities

by

Stewart D. North

September, 1968

Foreword

The attached Selected Bibliography was compiled by Drs. Benton H. Doherty, Roy J. Habeck, Joseph M. Zoeller, and Mr. Roger M. Kramer to provide references useful to planning and designing space for independent study. Their help in gathering and organizing information for this and other ERIC/CEF publications is recognized and appreciated.

Stewart D. North

Introduction

Ever-growing applications of the concept of independent study and the resultant learning are undoubtedly among the newest and most encouraging happenings in education today. Emphasis in educational literature, research, and speeches, gives attention to independent study, individualized instruction, modular scheduling, programmed content, computer-aided instruction and the sophisticated equipment and furnishings to support these learning activities.

This is not to suggest that independent study is a concept new to the history of education. The story of Abraham Lincoln doing sums on the back of a shovel in front of a flickering fireplace is remembered by all. Images of a child receiving his lessons individually from his teacher in the one-room schoolhouse and completing his assignments at the kitchen table at home are clearly recalled by many of the older generation. And the oft-quoted remark that the ideal university was Mark Hopkins seated at one end of a log with the student at the other end gives credence to independent study as a long recognized tool to learning. Through the years, however, the general practice has been to emphasize group instruction and minimize individual learning opportunities.

Recent developments have brought about a reassessment of long accepted educational practices. The fund of man's knowledge about himself, his society, and his environment has been doubling every decade. As the educational process contributes to human knowledge (the product of human inquiry), it has become necessary to revamp that process so as to accommodate its product. Educators and the lay public alike have come to recognize that the single textbook

and the teacher-directed approach to learning can only expose the student to the potential of becoming an educated man and not encourage self-directed education. Such an inefficient approach to learning is stifling to modern man's full understanding of himself and his relationship to his environment.

One cannot tour school facilities recently constructed without becoming aware of (1) the inclusion of new kinds of study spaces in the new buildings and (2) the need for still more unique design solutions. This trend to accommodate independent study is characteristic of all levels of education from elementary through college level. As new designs more appropriately reflect developing educational practices and accepted learning theory, facilities for individuals and small groups have become the focus of attention by educators and design specialists alike. Building designs today and the related equipment and furnishings are quite a departure from the educational plants of the immediate past which were predominately a repetition of eggcrate-like classrooms connected by a maze of corridors--classrooms in which pupil learning was the product of teacher-directed group activities derived from the single textbook.

INDEPENDENT STUDY DEFINED

Before proceeding with a discussion of space for independent study, a definition of independent study should be established. Beggs and Buffie[1] define independent study as "a learning situation within the school day which allows a student to develop personal

competencies through experiences as an individual but in interaction with others when needed." They add that independent study is characterized by freedom from constant supervision.

This definition is based on assumptions that all students: (1) have potentialities for self-initiative, (2) are capable of self-discipline, (3) possess resourcefulness, (4) are desirous of productivity, and (5) are capable of self-evaluation. In qualifying the definition, authorities assess a student as performing effectively in independent study if he (1) perceives and initiates worthwhile activities, (2) personalizes learning, (3) exercises self-discipline, (4) utilizes available human resources, (5) makes use of material resources, (6) produces results, and (7) strives for improvement.

The applications of independent study have too often been restricted to library-type research projects. Although there may be merit to the assignment of college-type research papers (particularly to the college bound) as a form of independent study, there is the potential for many other forms of independent study for students not stimulated by library activities. Within the school there could be open labs for carrying on short-term experiments, special individual labs for long-term experimentation, resource centers for each of the subject areas manned by appropriate specialists (teachers, teacher aides, and resource persons), electronically equipped carrels (a lazy man's answer to library-type research) and conference and discussion spaces.

Opportunities for independent study outside the school are almost unlimited. Too often little thought is given to promoting such independent study. The community is a rich resource for learning activities related to the social studies area. All types of surveys, attitude assessment and similar activities fall within the definition of independent study. Likewise, there is the potential for the establishment of work-study programs on an individual basis rather than the group approach commonly adopted. Business and industry are rich laboratories for learning.

DEVELOPMENTAL ACTIVITY SPACES

While there has been much effort in the past to make new school buildings functional, the traditional pattern has been to satisfy a majority of instructional needs by providing classroom, study hall, and library space. A shortcoming of such space distribution as far as implementing independent study for a majority of the students is that classrooms do not usually contain materials adequate for independent work. Also, study halls do not contain appropriate study materials to accommodate independent work, nor has the environment been one conducive to good study habits. Further, study halls tend to restrict learning opportunities to the single textbook approach or to materials that could be brought easily to the study hall by the student. In this environment learning is limited generally to memorization and reiteration.

The library has been the notable exception in that it has historically accommodated independent study. It stood out as the one facility designed to stimulate and foster self-directed education through individual initiative.

As the fund of knowledge grew and was recorded, libraries became increasingly essential and appropriate components of school design. Unfortunately, they did not become increasingly more used as a tool of independent study. The nature of the growing student bodies, the nature of instructional methods and materials, the nature of scheduling, the nature of the library environment or various combinations of these circumstances, caused the library to serve proportionately fewer students as an independent study base. Nonetheless, recently the library, in changed form, has again become a major area for providing opportunities for independent study.

Libraries were first believed to be essential only for college,[2] then for secondary schools and more recently for elementary schools. It is of interest to note that when the Harvard Library opened, freshmen were not allowed to use the facility and the availability of volumes severely limited for sophomores with only the upper classmen having reasonably unrestricted use of its resources. Just another indication of the evolutionary nature of the idea of independent study.

In the past while libraries had been intended as the student research center, they have also been a quiet zone in the typical school. Small group work and discussion generally have not been tolerated in the library. Further, if a wide range of books and

materials were available in numbers adequate to accommodate the student enrollment and interests, the school library began to approach mammoth size. In turn increased size confounded easy retrieval of information and frustrated student use because record keeping (while important) was often more important to the librarian than was the accessibility of books and learning materials.

Independent study as a desired goal has been discussed at length for many years. Implementation of ideas has been less evident. Recently, there has been experimentation to assess the effectiveness of independent study in a number of schools, for example Oak Park, Illinois. Here federal funds support the development of random access and retrieval information system.[3] Independent study, while still in its infancy as far as tested and proven technique and materials are concerned, is being accepted sufficiently by a variety of persons in all walks of life, not the least important of whom are teachers and other educational leaders. Progress and trend prompted the former H.E.W. secretary, John Gardner, to speculate that within twenty-five years virtually all instruction in the schools will be individualized.

The implications of instructional trends, actual and speculated, for school building design generated this observation by a design specialist:

> We have talked about the rows of square boxes called classrooms marching out of our buildings and the column in the very near future will disappear entirely over the distant horizon. The restrictive nature of classrooms and walls will finally leave our school buildings almost completely and the long envisioned, complete flexibility and adaptability will be a reality. School buildings serving the needs of individualized instruction, will,

> in many cases, have vast, open, carpeted spaces broken only by furniture and partial, movable, screening devices. As a school building of tomorrow uses its floor, exterior walls and roof to enclose a controlled physical environment, it literally will become a gigantic, single resource center filled with students pursuing their education individually. The classroom as a unit for thirty students and a teacher will not be there.[4]

As school buildings are being designed and constructed today, educational decision-makers are haunted by the knowledge that the school buildings created in the 1960's and 1970's will still be in existence past the turn of the century. To satisfy the trends that are evolving and which could evolve in the next century, trends which could be proven educationally sound over the years, it is essential that considerable flexibility be incorporated into today's building design.

Design should take into account a number of significant educational objectives. Shane's list[5] is illustrative of the concerns believed to be pertinent: (1) organization should require varied rates of pupil progress; (2) pupil evaluation should convey a clear idea of the pupil's race of progress with respect to his particular developmental characteristics, such as potential, motivation, social relationships, mental health, and academic performance; (3) subject matter must have meaning to the learner; (4) administrative policies should be based on a continuum of cumulative experiences, and (5) hopefully, recognition of these concerns will result in a number of gains including less teacher domination of pupil learning, integration of two or more subject matter areas, the student moving from a passive to an active role, more productive interaction among students and less emphasis by students on the importance of grades.

ENVIRONMENT FOR INDEPENDENT STUDY

Beggs and Buffie[6] emphasize that there is no single environment which is best, optimal, or ideal for independent study. However, Trump[7] advocates five types of environments for independent study. Included are learning resource centers, the library, the conference area, the relaxation space, and the formal study space.

As conceived by Trump, the learning resources center has two major functional divisions; the area for study, and the area for more active work. The study area is where students read, listen, view, think, write, and converse--with frequently used materials readily at hand. The work area is where the specialized "tools of the trade" are available. Because the noise and activity levels vary between the two areas, they should be separate although in close proximity. Certainly in all but the smaller schools, separate learning resource center areas are needed for each of the different categories of human knowledge that are designated as subject matter areas.

Independent study which occurs in the library is of two types. There are those students with advanced or unusual projects who seek and use the specialized resources of the library. For example, less frequently used and particularly valuable printed, audio, and visual references are kept there for safeguarding. Other students come to the library because it is a quiet zone. They frequently bring their own study materials with them. Silence is still the rule of the library which serves well these two types of independent study.

The conference areas would be designed to permit pupil or pupil-teacher conferences on a group or a tutorial basis. Such a facility permits the exchange of ideas and concepts by students. Such interaction hones pupil thought and individual personality. The relaxation area permits an environmental change-of-pace in student-learning processes. Student interface, talk sessions, and the coke break all tend to encourage effective pupil learning in the same manner as such practices have been found to promote adult effectiveness. And finally, the formal study hall, though reduced in size, would be retained in the Trump design. Again, because of individual differences, a minority of pupils are incapable of the self-directedness, the readiness, or the maturity which is a requisite of independent study.

Among the facilities most frequently associated with independent study is the carrel. Carrels are independent study areas which may be effectively used by any level of education.[8] At the college level, for instance, Beggs and Buffie suggest a carrel two feet by three feet. At the same time, smaller carrels are recommended for elementary and secondary students. Arrangements of carrels may vary according to the needs and organization of the particular school. Student access and use of carrels can vary with location in the building, arrangement in the room, and intended purpose. The complexity of carrels can range from a simple space for private study of printed materials to a sophisticated electronic system offering all types of recorded materials. The development of the electronic learning laboratory to serve such fields as

foreign language and business education is an example of the kind of complex equipment systems used by many schools in our country.

Present equipment used in the individual or independent study spaces includes such aids as record players, tape recorders, tape players, headsets, microphones, speakers, video tapes, slide projectors, motion projectors, screens, TV receivers, reflective optics, overhead projectors, opaque projectors, micro-projectors, view-finders, TV cameras, radios, intercoms, switches, responders, synchronizers, program selectors, control panels, percentage meters, and so forth. The purpose of reporting such varied equipment here is to emphasize that productive and improved independent study as judged by current equipment arrangement is somewhat dependent upon a multi-media approach to learning. The potential for adaptation of the full multi-media approach to learning must be incorporated in building design regardless of the attention given to relating it to independent study.

A discussion of multi-media learning equipment is incomplete without consideration of the potential incorporation of computer-aided learning as an important part of independent study. Burr[9] expresses the complex design implications best:

> The computer and related teaching machines will find massive use in American elementary and secondary schools in a very few years. Computer use is now fairly common for administrative purposes and for teaching data processing and computer techniques to students. It appears it will soon be ready for use in teaching a wide array of subject matters... What does the computer mean in relation to buildings? It means they must be electronically flexible as well as flexible in space concept. The buildings of the future will require free, horizontal slices of space either above ceilings or below floors. Such

> space must be planned to be accessible so it can provide movement area for the electronic flexibility required. In addition, electrical systems planning must be handled in smaller units so quick adaptation in any service will probably come from large computer centers with each center capable of handling many educational institutions with a total student enrollment of upward of 100,000 students.

New school facilities planned with future developments of independent study in mind must also take into consideration such influences as thermal, visual, and sonic environments. Since much of the emphasis in independent study is upon privacy, visual and acoustical conditions must be given special attention. Specific design of a given school project will determine the treatment of sub-environments.

UNANSWERED QUESTIONS

There has been little substantive research to measure the effectiveness and efficiency of various forms of independent study. However, Congreve[10] reported that children in the laboratory school, working independently, learned as much content as traditionally treated students. Further, students utilizing independent study grew in ability to define and solve problems and reordered their conceptions about the role of the teacher.

The question of independent study costs has been raised and studied also. All of the programs reported by Beggs and Buffie[11] show extra costs of some kind, but most institutions did not have the elaborate bookkeeping that could accurately determine costs above course instruction. The investigators estimated that the maximum cost for any of the 20 programs was a 25% increase in instructional cost.

This leads to the following questions in regard to independent study: (1) What is the effect of a small enclosed space that is characteristic of carrels on the psychology or physiology of the individual student? (2) What levels of lighting, ventilation, and heating are optimum? (3) How much control of the acoustical environment is necessary? (4) Can a cost-efficiency ratio be developed and used in evaluating independent study and its facilities? (5) Does independent study increase pupil achievement, morale, efficiency, etc.? (6) What ratio of group to individual study is optimum? (7) How can this be determined for each student? (8) What different approaches to independent study will be adaptive to primary, middle, and secondary school instruction? (9) How can the educational specifications for tomorrow's school best be reflected in today's school design?

FOOTNOTES

1. David W. Beggs and Edward G. Buffie, ed. Independent Study: Bold New Venture. Bloomington, Indiana University, 1965.

2. Ibid.

3. Ted Johnson, "An Information Retrieval System," The North Central Association Quarterly, Vol. LXI, No. 4, Spring, 1967.

4. Donald F. Burr, "First Annual School Administrators Seminar," American School Food Service Association, 1967, Denver, Colorado.

5. Harold G. Shane, "The School and Individual Differences," Individualizing Instruction, 61st Yearbook, NSSE (Chicago: University of Chicago).

6. Beggs and Buffie, ed., Op. cit.

7. J. Lloyd Trump, "Independent Study Centers: Their Relation to the Central Library," The Bulletin of the National Association of Secondary-School Principals, Vol. 50, No. 306, January, 1966.

8. Educational Facilities Laboratories, Inc., Western Regional Center, Study Carrels: Designs for Independent Study Space, Stanford: The School Planning Laboratory, Stanford University, 1963.

9. Burr, Op. cit.

10. Congreve, Willard J., Role of the Principal in School Improvement. Washington, D. C.: National Assoication of Secondary School Principals, Vol. 48:290, March, 1964, pp. 3-9.

11. Beggs and Buffie, ed., Op. cit.

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